

**REMARKS**

This Application has been carefully reviewed in light of the Office Action mailed April 28, 2004 ("Office Action"). In the Office Action, the Examiner rejects Claims 1-10 and 12-27 and objects to Claim 11. In order to advance prosecution of this case, Applicant amends Claims 1, 5, 9, 13, 18, 22, and 25 and cancels Claim 11 without prejudice or disclaimer. Claims 1, 5, 9, 13, 18, 22, and 25 have been amended to clarify, more particularly point out, and more distinctly claim inventive concepts previously present in these claims. Applicant makes no admission that these amendments narrow the scope of the claims or that the amendments are required for patentability. Applicant respectfully submits that no new matter has been added by the amendments to the specification or by the amendments to the claims. In order to advance prosecution of this Application, Applicant has responded to each notation by the Examiner. Applicant respectfully requests reconsideration and favorable action in this case.

**Amendments to the Specification**

The Examiner objects to the Specification because of certain informalities. The Examiner requests that the status of all parent priority applications be updated in the first line of the Specification, and that the status of all citations of U.S. filed applications in the Specification be updated where appropriate. Applicant has amended the Specification to address the issues identified by the Examiner.

The Examiner also objects to the Specification because of typographical errors on pages 38 and 42 of the Specification. Applicant has amended page 38, lines 26 and page 42, lines 13 and 15 to correct the typographical errors identified by the Examiner.

For at least these reasons, Applicant respectfully requests that the objections to the Specification be withdrawn.

**Section 101 Rejections**

The Examiner rejects Claims 1-34 under 35 U.S.C. § 101. According to the Examiner, the language of Claims 13-16, 18, and 21-27 raise a question as to whether the claims are directed merely to an abstract idea that is not tied to a technological art, environment, or machine which would result in a practical application.

Although Applicant believes that all previously pending claims recite statutory subject matter under § 101, to advance this case expeditiously to issuance, Applicant has amended independent Claims 13, 18, 22, and 25 to address the issues identified by the Examiner. For at least these reasons, Applicant respectfully requests that the rejection of the Claims 13-16, 18, and 21-27 under § 101 be withdrawn and the claims be allowed.

### **Claim Objections**

The Examiner has stated that Claim 11 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. To advance this case expeditiously to issuance, Claim 9 from which Claim 11 depends has been amended to include all of the elements of Claim 11, and Claim 11 has been cancelled. Therefore, Claim 9 is allowable.

The Examiner has stated that Claim 20 is similar to Claim 11 but is dependent from Claim 18 which is rejected under 35 U.S.C. § 101 and 112, second paragraph. To the extent that the Examiner has characterized Applicant's Claim 20, Applicant objects to any such characterization. Applicant has amended Claim 18 (from which Claim 20 depends) to address the § 101 and § 112 issues identified by the Examiner. As discussed below, Applicant believes that amended independent Claim 18 is also allowable. Therefore, Applicant has not amended Claim 20.

### **Section 112 Rejections**

The Examiner rejects Claims 5-8 and 13-27 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner states that "a third storage circuit in a feedback loop coupled to the fourth full adder" recited in Claim 5 creates ambiguity to the structure of the fourth full adder. (Office Action, page 5.) Applicant has amended Claim 5 to recite "the fourth adder receiving an input from the third storage circuit." Applicant respectfully submits that the structure of the fourth full adder is not ambiguous as recited in amended Claim 5. Accordingly, Applicant respectfully requests that the § 112, second paragraph, rejection of Claims 5-8 be withdrawn.

With regard to Claims 13-27, the Examiner states that the inclusion of variables without defining their purpose creates uncertainty and does not adequately define the scope

of the invention. (Office Action, page 5.) Applicant has amended Claims 13, 18, 22 and 25 to address the issues identified by the Examiner. Accordingly, Applicant respectfully requests that the § 112, second paragraph, rejection of Claims 13-27 be withdrawn.

### **Section 102 Rejections**

The Examiner rejects Claims 5-10, 12-16, 18-19, and 21-27 under 35 U.S.C. § 102(b) as being anticipated by "A Systolic, Linear-Array Multiplier for a Class of Right-Shift Algorithms," authored by Kornerup ("*Kornerup*").

Applicant respectfully submits that *Kornerup* fails to disclose, or even teach or suggest, the elements specifically recited in Applicant's claims, as amended. As a first example, *Kornerup* fails to disclose, or even teach or suggest, the following the input-to-output transfer relationships, wherein:

- (1) a product output comprises a remainder of a variable modulus two, the product output representing a first number multiplied by a second number;  
the variable comprises a sum of a product input, a first product, a second product, and a quotient input, the first product representing an integer value multiplied by a modulus value, the second product related to a product of the first number and the second number;  
a quotient output comprises the variable divided by two; and  
the integer value comprises a remainder of the product input modulus two

(recited in independent Claim 5, as amended); and

- (2) a product output comprises a remainder of a variable modulus two, the product output representing a first number multiplied by a second number;  
the variable comprises a sum of a product input, a first product, and a quotient input, the first product representing an integer value multiplied by a modulus value;  
a quotient output comprises the variable divided by two; and  
the integer value comprises a remainder of the product input modulus two

(recited in independent Claim 18, as amended).

*Kornerup* discloses a multiplier having cells that provide for the interleaving of multiplication and modulo reduction. (*Kornerup*, page 892, column 2, paragraph 3.) The cells perform a multiplication operation according to:

*Algorithm MM:*

$S := 0;$   
for  $i := 0$  to  $n$  do  
L1:  $q_i := S \bmod 2;$   
L2:  $S := (S + q_i m) \div 2 + b_i A;$

end;  
return S

(*Kornerup*, page 895, column 1, paragraph 4.) *Kornerup*, however, fails to disclose, or even teach or suggest, the transfer functions as recited in independent Claims 5 and 18, as amended. For at least these reasons, *Kornerup* fails to disclose the elements specifically recited in independent Claims 5 and 18. Accordingly, Applicant respectfully requests reconsideration and allowance of independent Claims 5 and 18.

Independent Claims 13 and 22 recite certain limitations substantially similar to those recited in independent Claim 5, and independent Claim 25 recite certain limitations substantially similar to those recited in independent Claim 18. Accordingly, for at least the same reasons, Applicant also respectfully requests reconsideration and allowance of independent Claim 13, 22, and 25.

As discussed above, the Examiner has stated that Claim 11 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. To advance this case expeditiously to issuance, Claim 9 from which Claim 11 depends has been amended to include all of the elements of Claim 11, and Claim 11 has been cancelled. Therefore, Applicant respectfully requests reconsideration and allowance of independent Claim 9.

Applicant's dependent claims are allowable based on their dependence on the independent claims and further because they recite numerous additional patentable distinctions over the reference of the rejection. Because Applicant believes he has amply demonstrated the allowability of the independent claims over the reference of the rejection, and to avoid burdening the record, Applicant has not provided detailed remarks concerning these dependent claims. Applicant, however, remains ready to provide such remarks if it becomes appropriate to do so.

For at least these reasons, Applicant respectfully requests reconsideration and allowance of Claims 5-10, 12-16, 18-19, and 21-27.

**Section 103 Rejections**

The Examiner rejects Claims 1-4 and 17 under 35 U.S.C. § 103(a) as being unpatentable over *Kornerup* in view of U.S. Patent No. 5,073,870 issued to Morita (“*Morita*”).

Applicant respectfully submits that the combination of *Kornerup* and *Morita* as suggested by the Examiner fails to disclose, teach, or suggest elements specifically recited in Claims 1-4 and 17. As discussed above, *Kornerup* fails to disclose, teach, or suggest the input-to-output transfer relationship as recited in Claims 5 and 13, which is substantially similar to the input-to-output transfer relationship as recited in Claim 1. *Kornerup* fails to disclose, teach, or suggest the elements specifically recited in independent Claims 1 and 13, whether *Kornerup* is considered alone or in combination with *Morita*. Accordingly, the *Kornerup-Morita* combination suggested by the Examiner fails to disclose the elements specifically recited in independent Claims 1 and 13.

Applicant’s dependent claims are allowable based on their dependence on the independent claims and further because they recite numerous additional patentable distinctions over the references of the rejection. Because Applicant believes he has amply demonstrated the allowability of the independent claims over the references of the rejection, and to avoid burdening the record, Applicant has not provided detailed remarks concerning these dependent claims. Applicant, however, remains ready to provide such remarks if it becomes appropriate to do so.

For at least these reasons, Applicant respectfully requests reconsideration and allowance of Claims 1-4 and 17.

**CONCLUSION**

Applicant has made an earnest attempt to place this case in condition for immediate allowance. For the foregoing reasons and for other reasons clear and apparent, Applicant respectfully requests reconsideration and allowance of the pending claims.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Keiko Ichiye, Attorney for Applicant, at the Examiner's convenience at (214) 953-6494.

Applicant believes no fees are due. However, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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